The Coal Situation

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THE COAL INDUSTRY IN YEARS OF EXCESS ENERGY

Contrary to popular belief, the coal industry has continued to perform reasonably well since the peaking of oil prices in 1981. In fact, 1984 and 1985 have been record years for global coal production and trade. In addition, the long term outlook for coal continues to be positive despite today's relatively low and unstable oil prices.

Even prior to the recent fall in oil prices, various factors led to the public's opinion that the coal industry was seriously suffering. These factors can be traced to coal's ownership (very few independent coal companies) and the very weak performance of the steel and metals industries. Although there have been large write-offs of mining subsidiaries, coal has been excluded in the majority of cases, and actually often represented the only unit to generate cash flow. This led one weekly business magazine to display a coffin on its cover announcing the "death of mining". No exception was made for the coal industry.

The fact remains that the coal industry continues to fare remarkably well; at least in terms of volume. Calendar year 1985 represented another period with record global production of over 4 billion tonnes. World trade reached a record level of 335 million tonnes (an increase of 8.4%) in which seaborne trade of thermal coal increased 24%. Today's performance, however, is no where near the projections, prepared five years ago, of enormous growth rates. Furthermore, the weak steel industry resulted in very poor performance in the metallurgical coal segment thus clouding the overall statistics. In addition, a new source of thermal coal appeared as high volatile metallurgical coal entered the steam coal market.

As shown in Table 1, over the entire 1980 period, metallurgical coal trade increased 24.7 million tonnes or 17.4% while thermal coal trade increased 59.6 million tonnes or 51.5%. Remarkably, much of this increase occurred during the last three years of disinflation, disinvestment and excess oil supply. It can also be argued that the major exporters in Australia, South Africa and Canada have been extremely fortunate that their respective currencies have been so weak against the U.S. dollar; the international coal price base. This has greatly helped profitability through a period of otherwise weak prices.

This edition of The Coal Situation reflects on how, despite general public opinion to the contrary, the coal industry has actually been able to increase volume in order to meet an ever increasing demand. This was accomplished in spite of weak prices and a derth of bankable, long-term sales contracts. This leads to the obvious question: How long can these alternate methods continue to be used before major investments in new supply must be made once again?

TABLE 1

WORLD HARD COAL TRADE (TONNES MM / % CHANGE)

	1980	1981	1982	1983	1984	1985
Metallurgical	142.4	141.8/ −0.4%	138.2/ −2.5%	135.3/−2.1%	155.8/+15.2%	165.3/+ 6.1%
Thermal	115.7	130.1/+12.5%	135.2/ +3.9%	130.7/−3.3%	148.9/+13.9%	169.6/+13.9%

Source: Chase Manhattan Bank

The Quiet Expansion

Much has occurred in the mining industry over the past 18 months. In late 1984 (VOL. 5, NO. 1 of the Coal Situation) we wrote of the global shift to lower rank, surface mineable coal. This very trend, which resulted in numerous, large open cast coal operations, is now having its effect on the coal market via an ability to incrementally expand. The oil price shock years permitted huge infrastructure investments and are still felt through the relative ease of current additional expansion. This is done through further use of existing rail and port facilities as well as the metallurgical coal shift to thermal markets and the addition of equipment (either expanding stripping capacity or upgrading to longwall). The relative stability of labor in the coal producing regions has further led to the current high comfort level with coal supply. With the exception of the 12 month U.K. strike, few man days have been lost in South Africa, Poland, Australia or the U.S.A. in the past few years. Indeed, the absence of a U.M.W.A. strike in the U.S.A. in late 1984 caught many by surprise and did hurt subsequent quarters due to the necessity to work down stockpiles.

This "quiet" expansion of coal supply (relative to the boom years of the early '80's) has a dangerous side. It leads to the misconception of a coal industry with endless overcapacity. However, demand for coal continues to increase (although sometimes it seems to be painfully slow) and later this decade more "grass roots" type expansions will be necessary.

The problem facing the coal industry is not one of long term viability, rather it is one of attempting to match intermediate large stair step increases in supply with smaller and steadier constant increases in demand. The nature of many of the newer coal mines is that they required a large initial production. Similar mines cannot be financed during years of energy oversupply since long term and or large volume contracts are not being offered by purchasers as long as they can choose from a variety of spot and short term purchases at competitive prices.

Improving Productivity and Reducing Costs

Much of coal's recent success has been due to its ability to maintain and, in many cases, reduce costs in the face of lower prices. A major contribution in this area is the improvement in productivity which reduces costs and adds to the quiet expansion cited above. The increase in productivities is reflective of several factors including:

- more stable labor relations
- new mines of five years ago having now completed their development stage
- higher percentage of longwalls underground
- higher percentage of surface production
- higher percentage of large mines
- lower percentage of captive operations

This improving productivity is illustrated for Australia and the U.S.A. in Table 2.

It is apparent looking at the table that much of the improved overall productivity is due to the increasing influence of surface mined coal. Table 3 illustrates how Australia and the U.S.A. have increased the percentage of surface production from 50% to 65% and from 54% to 61% respectively over the past ten years.

TABLE 2

AVERAGE OUTPUT PER PERSON PER DAY

	1976	1977	1978	1979	1980	1981	1982	1983	1984
Australia (Raw Tonnes*)									
Surface	30.9	30.2	30.1	29.1	29.5	26.3	24.6	26.9	30.3
Underground	9.9	10.1	10.2	9.6	10.1	10.3	11.3	12.1	12.3
Total	15.1	15.2	15.6	15.2	15.7	15.4	16.2	18.3	20.3
U.S.A. (Washed Tons**)									
Surface	26.4	26.6	25.8	27.0	28.3	31.1	30.6	33.6	35.8
Underground	9.1	8.7	8.4	9.2	9.9	10.6	11.2	13.2	14.0
Total	14.5	14.8	14.7	15.3	16.2	18.1	18.1	21.2	22.4

*Metric Tons
**Short Tons

Source: National Coal Association
Joint Coal Board

Further adding to the trend to higher productivity, regardless to surface or underground production methods, is the decrease in captive operations. These operations are typically owned by and captive to a public utility power plant or a steel mill and, as such, may lack the element of competitiveness needed to provide the impetus for productivity improvements.

Both Australia and the U.S.A. have witnessed a marked movement away from captive coal mines. In 1970, Australia produced over 28% of its coal at captive operations. By 1984 this decreased to only 17%. Similarly, captive production in the U.S.A. dropped from 19.4% in 1979 to 12% in 1984. This trend is expected to continue as security of supply issues are viewed less critically by the consumer.

TABLE 3

ANNUAL COAL PRODUCTION BY METHOD

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Australia											
Surface (Tonnes*-MM)	35.1	38.7	43.4	44.7	45.9	49.4	51.[illegible]	58.8	66.4	70.6	90.3
% of total	49.8	51.8	51.5	51.2	51.4	53.2	55.1	53.0	55.7	58.6	64.9
Underground (Tonnes*-MM)	35.4	36.1	40.9	42.6	43.5	43.4	42.1	52.1	52.7	49.9	48.8
% of total	50.2	48.2	48.5	48.8	48.6	46.8	44.9	47.0	44.3	41.4	35.1
U.S.A.											
Surface (Tons**-MM)	326.1	355.6	383.8	425.4	422.9	457.4	490.6	499.2	491.7	474.9	537.0
% of total	54.0	54.8	56.4	61.5	63.6	59.1	59.9	61.6	59.4	61.4	60.6
Underground (Tons**-MM)	277.3	292.8	294.9	266.0	242.2	316.1	329.1	311.1	336.7	298.0	349.8
% of total	46.0	45.2	43.5	38.5	36.4	40.9	40.1	38.4	40.6	38.6	39.4

*Metric Tons
**Short Tons

Source: National Coal Association
Joint Coal Board

The effect of the increasing size of individual mines on productivities through better economies of scale is also clear by analyzing Australian and U.S. statistics. In 1980 Australia's 20 largest mines produced 55 million tonnes but by 1984 the largest 20 mines produced almost 73 million tonnes; an increase of 33%. The numbers for the U.S. are even more dramatic, depicted in Table 4. Not only did production by the 50 largest U.S. mines increase by 84% from 1976 to 1984 but their percentage of total U.S. production increased by 44% from 22.9% to 32.9%.

To note one more strong characteristic of this period, one need only look at the trend to increasing longwall applications resulting in greatly improved productivities for many mines in both Australia and the U.S.A. The number of longwall faces in New South Wales increased from 5 in 1981 to 12 in 1984 and longwall production as a percentage of underground production increased from 4% in 1978 to 7.6% in 1981 to 20.2% in 1984. Similarly, the number of U.S. longwall installations increased from 53 in 1974 to 112 in 1984 while longwall production increased from 9.5 million tons (3.5% of underground production) in 1974 to 47.3 million tons (16% of underground production by 1983.

TABLE 4

FIFTY LARGEST U.S. COAL MINES

	1976	1977	1978	1979	1980	1981	1982	1983	1984
Annual Production (Million Short Tons)	156	166	170	205	243	242	255	259	287
% of Total Production	22.9	25.1	25.6	26.4	29.2	30.2	31.6	33.2	32.9

Source: National Coal Association

Conclusion

Now the industry faces the current low oil prices. Although few pundits feel that these price levels will hold (and even at these prices many coal users still find coal to be less expensive), the likelihood of investments in coal is being set back. Eventually, the quiet expansion will run its course and new greenfield developments will be required. The key question will be whether or not this transition is smooth or traumatic. The current market attitude suggests the latter.

Despite the current disappointing return on equity for most coal suppliers, the coal market continues to grow, most coal subsidiaries generate cash flow (generally more than their metal mining brothers) and a new generation of coal projects will be required. Given the lengthy lead times for these capital intensive projects and the current laissez-faire attitudes of coal consumers, we may well be in for a rude awakening in the early 1990's.

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The Coal Situation

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AUTHOR'S NOTE

The projections provided in this analysis are those released by the North American Electric Reliability Council (NERC) in its report, *1986 Electricity Supply & Demand.* They do not necessarily reflect the opinions of The Chase Manhattan Bank. Any citation of the information provided below should reference the original source.

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NORTH AMERICAN ELECTRIC POWER SUPPLY & DEMAND 1986 – 1995

The North American Electric Reliability Council (NERC) recently published its annual survey of utility projections of electric power supply and demand in North America. The 1986 edition of the report *Electricity Supply & Demand** provides, on an aggregated regional basis (see Figure 1), NERC member utility projections of load requirements, capacity additions and fuel requirements for the years 1986 through 1995.

FIGURE 1

NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL

ECAR
East Central Area Reliability Coordination Agreement

ERCOT
Electric Reliability Council of Texas

MAAC
Mid-Atlantic Area Council

MAIN
Mid-America Interpool Network

MAPP
Mid-continent Area Power Pool

NPCC
Northeast Power Coordinating Council

SERC
Southeastern Electric Reliability Council

SPP
Southwest Power Pool

WSCC
Western Systems Coordinating Council

AFFILIATE

ASCC
Alaska Systems Coordinating Council

The purpose of this issue of *The Coal Situation* is to summarize and review the latest NERC projections as to their meaning to the United States coal producers.

* A copy of NERC's report, *1986 Electricity Supply & Demand for 1986-1995*, can be obtained from: North American Electric Reliability Council, 101 College Road East, Princeton, NJ 08540-6601.

NERC Projections of Annual Electrical Energy Demand

As shown in Table 1, NERC utilities are projecting a growth in U.S. net annual electric energy demand which averages 2.3 percent per year over the period 1985–1995 (1985 as base year). This rate of growth is essentially unchanged from NERC's 1985 10-year projection. Since it breaks a series of 10-year projections each of which indicated lower rates of growth than the previous, this year's submission to NERC may indicate a stabilization in electricity demand growth rates in the U.S.

TABLE 1

NERC PROJECTIONS OF NET ANNUAL ELECTRICAL ENERGY REQUIREMENTS FOR U.S. AND CANADIAN ELECTRIC UTILITIES

(Terawatt-hours)

NERC Region	1985 Actual	Projections 1986	Projections 1995	Average Annual Growth – %/Yr 1985-1995
ECAR	387.5	389.0	469.4	2.1
ERCOT	190.8	194.8	277.4	4.0
MAAC	189.7	191.7	221.1	1.6
MAIN	173.6	177.1	207.4	1.8
MAPP-U.S.	105.8	108.9	131.5	2.1
NPCC-U.S.	220.8	226.6	268.0	1.9
SERC	522.6	526.3	658.0	2.5
SPP	229.7	223.4	271.7	2.2
WSCC-U.S.	478.8	487.3	598.7	2.3
NERC-U.S.*	2,499.2	2,525.1	3,103.2	2.3
MAPP-Canada	26.7	27.5	35.2	2.8
NPCC-Canada**	246.8	248.9	331.3	3.2
WSCC-Canada	71.7	73.8	95.6	2.9
NERC-Canada*	345.2	350.3	462.0	3.1

* Totals may not add due to independent rounding

** Includes for the first time data for Nova Scotia Power Corporation.

Source: NERC, *1986 Electricity Supply & Demand for 1986-1995*, October, 1986

As for Canada, Canadian utilities are projecting a growth rate in annual electric energy demand of 3.1 percent per year over the period. Although regional adjustments have been made, the national rate of growth is essentially unchanged from last year's projections. (See *The Coal Situation*, Vol. 6 No. 1)

NERC Projected Capacity Additions By Fuel Type

The latest NERC projections show a U.S. utility electricity demand in 1995 that is 24.2 percent greater than the 1985 actual. For Canadian utilities, net annual requirements for load is projected to increase by 33.8 percent by 1995 reaching 462.0 Twhr versus the 345.2 Twhr required in 1985.

To meet the growth in load requirements and to replace 11.8 gigawatts (GW) of planned unit retirements, the U.S. electric utilities in their submissions to NERC are planning to add 86.7 GW of generating capacity over the period 1986–1995. As shown in Table 2, U.S. utilities are currently anticipating the addition of 30.7 GW of coal-fired capacity and 29.8 GW of nuclear-based capacity over the decade. Together, these two energy sources represent 69.8 percent of total U.S. utility planned capacity additions over the period with the remaining additions represented by oil and gas, hydro, and others (geothermal, cogeneration, etc.).

TABLE 2

NERC GENERATING UNIT ADDITIONS, RETIREMENTS, AND CONVERSIONS 1986-1995

(Gigawatts)

	United States		Canada	
	Gigawatts	% of Total	Gigawatts	% of Total
Nuclear	29.8	34.4	5.2	37.6
Coal	30.7	35.4	3.0	21.8
Hydro	2.4	2.7	4.9	35.3
Oil/Gas	7.7	8.9	0.5	4.0
Pumped Storage	1.4	1.6	0.0	0.0
Other (Utility)	5.1	5.9	0.0	0.0
Other (Non-Utility)*	9.6	11.1	0.2	1.3
Total Additions**	86.7	100.0	13.8	100.0
Retirements	11.8		0.2	
Oil-to-Coal Conversions	1.3		0.1	

*Cogeneration and small power production facilities under PURPA and other non-utility generation reported by electric utilities. Of the total, 5,533 MW (U.S.) and 180 MW (Can.) are projected to be cogeneration capacity.

**Totals may not add due to independent rounding.

Source: *1986 Electricity Supply & Demand for 1986-1995*, October, 1986

As for the Canadian utilities, a total of 13.8 GW of new capacity is planned to be added by 1995 (planned Canadian retirements total 0.2 GW between 1986–1995). Nuclear, at 5.2 GW or 37.6 percent of the total is the principal form of new additions in Canada followed by hydroelectric facilities at 4.9 GW or 35.3 percent of the total. In third place is coal, with Canadian utilities anticipating the addition of 3.0 GW of capacity by 1995.

Based on the planned additions outlined above and current unit capabilities, U.S. and Canadian utilities are projecting the share of net generation by fuel type shown in Table 3.

TABLE 3

NERC PROJECTED SHARE OF ELECTRICITY GENERATION BY ENERGY TYPE

(Percent)

	U.S.		Canada	
	1985 Actual	1995 Forecast	1985 Actual	1995 Forecast
Coal	56.8	53.3	20.8	17.4
Nuclear	15.5	21.4	16.3	24.3
Hydro	11.4	8.3	61.7	54.2
Oil	3.6	4.2	0.8	1.7
Gas	11.7	8.5	0.4	1.7
Other	1.0	4.3	—	0.7
Total	100.0	100.0	100.0	100.0

Source: NERC, *1986 Electricity Supply & Demand for 1986-1995*, October, 1986

In Canada, the predomination of nuclear and hydroelectric capacity additions results in the sharp decline in the share of power generated with coal, falling from 20.8 percent in 1985 to 17.4 percent by 1995. Like Canada, the share of U.S. power generated with coal is also projected to decline, falling to 53.3 percent from its 56.8 percent share of generation in 1985.

NERC Projected Coal Requirements

The NERC projections of the quantity of coal to be consumed in generating electricity between 1986 and 1995 are shown in Table 4. In 1995, U.S. utilities are anticipating the use of 797.4 million net tons of coal. This represents an increase of 109.2 million tons over the actual quantity of coal consumed in 1985, an average compound rate of growth of 1.5 percent per year between 1985 and 1995. However, the growth in coal usage is lower than that anticipated in NERC's 1985 projections.

As shown in Table 5, this year's projected U.S. utility coal usage in 1994 is 39.9 million tons lower than last year's projected consumption for the same year. In fact, with the exception of 1986, this year's NERC projected coal usage by U.S. utilities has been reduced in each of the forecast years. These reductions in anticipated coal usage reflect the addition of nuclear power plants, increased use of natural gas and increased generation by non-utility power generation for which the fuel supply was not identified by NERC utilities. In reality, a portion of the non-utility generation will be with coal.

The 1986 projections of Canadian utility coal consumption (including Nova Scotia) are also lower than those anticipated in 1985. These lower projections reflect lower levels of coal consumption in the Province of Ontario.

TABLE 5

COMPARISON OF NERC's 1985 AND 1986 PROJECTIONS OF NORTH AMERICAN UTILITY COAL CONSUMPTION

	United States		
	1985 Projections	1986 Projections	% Charge 1986 vs 1985
1985	671.4	688.2*	2.5
1986	667.2	675.9	1.3
1987	682.3	677.1	–0.8
1988	704.1	692.7	–1.6
1989	719.0	704.3	–2.0
1990	730.8	710.7	–2.8
1991	745.5	722.7	–3.1
1992	768.1	740.0	–3.7
1993	794.1	756.8	–4.7
1994	815.5	775.6	–4.9
1995	–	797.4	NA

	Canada **		
	1985 Projections	1986 Projections	% Charge 1986 vs 1995
1985	38.2	40.4*	5.8
1986	37.1	36.5	–1.6
1987	35.9	36.2	0.8
1988	36.4	35.9	–1.4
1989	38.0	35.5	–6.6
1990	38.5	38.0	–1.3
1991	40.4	39.8	–1.5
1992	40.6	40.3	–0.7
1993	41.3	41.2	–0.2
1994	43.3	42.6	–1.6
1995	–	44.8	NA

* Actual 1985 consumption

** The 1986 edition of *Electricity Supply & Demand* includes for the first time data for Nova Scotia Power Corporation. For comparison purposes, Nova Scotia coal consumption is excluded from this table (See Table 4)

NA: Not Applicable

Source: NERC, *1985 Electricity Supply & Demand 1985-1994*, 1985 and NERC, *1986 Electricity Supply & Demand for 1986-1995*, October, 1986

TABLE 4

NERC PROJECTED NORTH AMERICAN UTILITY COAL CONSUMPTION – 1986–1995

(1000 Net Tons)

	ACTUAL 1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
NERC-U.S.											
ECAR	170427	169236	166410	171457	173774	175747	176330	178523	190107	182739	186264
ERCOT	56161	56793	59433	62629	64179	64864	68563	76345	93746	93295	102569
MAAC	38936	38433	38454	37478	38360	37961	38654	39499	40020	40875	41861
MAIN	55402	56268	53971	52044	52958	53864	54289	55202	56559	56901	58249
CMNWLTH EDISON	13568	13660	11390	8960	9510	9470	9280	9820	10450	10720	11350
EAST MISSOURI	10155	10658	11134	10691	11450	11255	11214	11638	11786	11531	12222
S CENT ILLINOIS	16296	15472	14156	14113	14089	14810	15031	14532	14869	15010	14474
WIS–UPPER MICH	15383	16478	17291	18280	17909	18329	18764	19212	19454	19640	20203
MAPP	56402	52626	52413	54908	55145	56487	54155	54968	56726	57516	58436
NPCC	15007	15457	16342	17115	16890	16486	16156	16927	17410	17757	17926
NEW YORK	9794	9122	10247	11206	11186	10848	10803	11302	11441	11710	11921
NEW ENGLAND	5213	6335	6095	5909	5704	5638	5353	5625	5969	6047	6005
SERC	135288	131516	126551	126173	127668	128291	134971	136555	137598	138144	138247
FLORIDA	14227	15332	16918	17921	19723	19434	19931	20090	20348	20500	20781
SOUTHERN	52768	50667	47552	46551	45940	46059	49014	48858	47294	46701	46388
TVA	32768	29636	27296	27592	26722	25918	27255	28572	28359	26712	27426
VACAR	35525	35881	34785	34109	35383	36880	38771	39035	41597	44231	43652
SPP	77141	70496	73169	74863	75284	76533	77264	78432	80170	81521	85605
SOUTHEAST	22776	17377	18023	18650	17551	17715	17827	17745	18651	18704	21202
WEST CENTRAL	27967	27916	28811	29006	30118	30711	30824	31402	32019	32728	34004
NORTHERN	26398	25203	26335	27207	27615	28107	28613	29285	29500	30089	30399
WSCC	83417	85109	90384	96042	100018	100461	102314	103538	104492	106897	108235
NU POOL	33110	30299	32936	37190	40783	40956	41144	41339	41409	41340	41343
ROCKY MT-AREA	15267	16691	17524	18036	18851	19377	19971	20207	20433	21329	21906
ARIZ-N. MEX	22425	21943	22317	21755	22534	23323	24633	25232	25655	25884	26681
CALIF-SO. NEV	12615	16176	17607	19061	17850	16805	16566	16760	16995	18344	18305
TOTAL (U.S.)	688181	675934	677127	692708	704277	710694	722696	739989	756828	775645	797392
NERC-CANADA											
MAPP	9344	7737	8101	8602	8861	8993	9255	9504	9616	9842	10103
NPCC	14803	11741	10621	9419	8181	9391	10410	9793	9920	10148	11580
NEW BRUNSWICK	575	461	552	548	572	697	846	826	829	832	834
NOVA SCOTIA	2153	2118	2213	2323	2355	2444	2965	3127	3251	3346	3476
ONTARIO	12075	9162	7956	6548	5254	6250	6599	5840	5840	5970	7270
QUEBEC	0	0	0	0	0	0	0	0	0	0	0
WSCC	18461	19126	19690	20178	20828	21969	23133	24895	24937	25864	26712
TOTAL (CANADA)	42600	30604	38402	38199	37870	40353	42798	43392	44473	45856	48395

Source: NERC, *1986 Electricity Supply & Demand for 1986-1995*, October, 1986

As shown in Table 6, NPCC-Ontario, more specifically Ontario Hydro, is projecting lower usage of coal in this year's forecast. Since the company imports almost 80 percent of its coal requirements from the U.S., this year's projections could represent a deterioration in the volumetric requirements from U.S. producers.

TABLE 6

COMPARISON OF NERC's 1985 AND 1986 PROJECTIONS OF UTILITY COAL CONSUMPTION IN NPCC-ONTARIO

(Million Net Tons)

	NPCC—Ontario		
	1985 NERC Projections	1986 NERC Projections	% Change 1986 vs 1985
1985	11.6	12.1*	4.3
1986	10.0	9.2	-8.0
1987	7.9	7.8	-1.3
1988	6.7	6.5	-3.0
1989	6.8	5.3	-22.1
1990	6.1	6.3	3.3
1991	6.9	6.6	-4.4
1992	6.1	5.8	-4.9
1993	5.9	5.8	-1.7
1994	6.6	6.0	-9.1
1995	—	7.3	NA

* Actual

NA: Not Applicable

Source: NERC, *1985 Electricity Supply & Demand 1985-1994*, 1985 and NERC, *1986 Electricity Supply & Demand for 1986-1995*, October, 1986.

As for the sources of coal supply for the U.S. NERC utilities, the majority of their anticipated requirements continued to be projected to come from mines located west of the Mississippi River. As shown in Table 7, NERC has identified the geographical mining location for 93.4 million tons of the total 109.4 million tons of additional coal requirements to be consumed by U.S. electric utilities in 1995. Of the total for which mining locations have been indicated, 80.3 percent is projected to be mined west of the Mississippi River. The increased use of lignite represents 48.1 percent of the identifiable sources of incremental coal supply, the vast majority of which (87.4 percent) is the result of the projected increase in the use of Texas lignites to be consumed by the utilities in NERC's ERCOT region.

TABLE 7

NERC UTILITY PROJECTED SOURCES OF U.S. UTILITY COAL SUPPLIES

Coal Production Regions	Net Increase 1985-1995 (Million Tons)	Percent of Total Identified
East of Mississippi River & Imports	13.1	14.0
West of Mississippi River		
— Lignites	48.1	51.5
— Others	32.2	34.5
Total Identified Sources	93.4	100.0
Unidentified Sources	15.8	
Grand Total	109.2	

Source: NERC, *1986 Electricity Supply & Demand for 1986-1995*, October, 1986

Summary and Conclusions

In summary, the latest NERC projections of North American electric power supply and demand indicates a stabilization in electricity demand growth rates in the United States. However, despite a national average rate of growth equal to their 1985 10-year projection, NERC utilities are projecting lower than previously expected generation from coal-fired facilities and therefore lower coal requirements.

Other than for the need to develop additional lignite operations, the latest NERC projections of the growth in the use of both eastern and western U.S.-produced coals continue to remain well within the bounds of *existing* productive capabilities of the nation's coal industry.

Vincent J. Calarco, Jr.
Vice President — Coal Economist

The Standard Oil Company
through a wholly-owned subsidiary has sold certain coal properties in Pennsylvania and West Virginia

to

Consolidation Coal Company
an indirect wholly-owned subsidiary of

E.I. du Pont de Nemours and Company

The undersigned initiated this transaction, assisted in the negotiations and served as financial advisor to The Standard Oil Company.

Chase Manhattan Capital Markets Corporation
December 15, 1986

Chase Investment Bank

The Standard Oil Company
through a wholly-owned subsidiary has sold certain undeveloped coal properties in Mingo and Logan Counties, West Virginia

to

Pocahontas Land Corporation
a wholly-owned subsidiary of

Norfolk Southern Corporation

The undersigned initiated this transaction, assisted in the negotiations and served as financial advisor to The Standard Oil Company.

Chase Manhattan Capital Markets Corporation
December 15, 1986

Chase Investment Bank

The Coal Situation

Vol. 7 – No. 2
MARCH, 1987

INTERNATIONAL COAL TRADE – 1987

An estimated 336.1 million metric tons (tonnes) of coal were traded internationally last year. While only marginally greater than the previous record of 335.8 million tonnes achieved in 1985, it nevertheless was a remarkable performance given the environment in which the market was operating. On the one hand, lower levels of steel production, partly due to the decline in the value of the U.S. dollar relative to the Japanese yen and major European currencies, led to reductions in metallurgical coal imports. On the other hand, despite tumbling oil prices and relatively low economic growth rates, thermal (steam) coal imports continued to grow thereby offsetting the decline in the coking coal market.

The purpose of this issue of *The Coal Situation* is to review the performance of coal trade in 1986 and to provide an outlook for trade flows in 1987.

Review of 1986

The world steel producing countries imported 160.0 million tonnes of metallurgical coal in 1986. This represents a decline of almost 5 million tonnes from the level of trade attained in 1985. As shown in Table 1, the vast majority of this decrease occurred in the European Economic Community (EEC-12), prima ily reflecting reduced metallurgical coal imports by France, Italy, Spain and the United Kingdom. More modest reductions were experienced in North America (specifically Canada), Other Western Europe and Japan. Slightly offsetting reduced imports in these areas were increases by the Latin America and Other Asia regions. India represented the vast majority of the increase in imports in the latter region.

In the thermal coal segment of the market low electricity growth rates and increased nuclear power production led to reduced imports by the EEC-12 and North America (specifically Canada) while Japan showed a very modest reduction from the preivous year. Offsetting these declines were the positive gains in thermal coal imports by the other coal importing regions resulting in a record 176.0 million tonnes of trade in 1986. In short, while the dramatic fall in oil prices through most of 1986 undoubtedly had some impact on the outcome in thermal coal trade over the year, the low point for the price of oil was too short-lived to offset the contractual arrangements and other institutional lag effects (purchasing practices) which support continued coal purchases in the short-term. It must be recognized that falling oil prices also influenced the price of coal in terms of transportation costs and f.o.b. pier prices. The resulting lower delivered cost of coal to the consumer served to support continuation and growth in thermal coal trade, or at least minimize reductions.

TABLE 1
WORLD HARD COAL IMPORTS 1986 VERSUS 1985
(Million Metric Tons)

	METALLURGICAL COAL			THERMAL COAL			TOTAL		
	1985 (R)	1986 (P)	% Change	1985 (R)	1986 (P)	% Change	1985 (R)	1986 (P)	% Change
North America	6.4	5.8	– 9.4	10.3	9.3	– 9.7	16.7	15.1	– 9.6
Latin America	10.8	11.0	1.9	0.7	1.1	57.1	11.5	12.1	5.2
EEC-12	38.2	34.9	– 8.6	70.2	69.3	– 1.3	108.4	104.2	– 3.9
Other W. Europe	10.0	9.3	– 7.0	10.9	11.3	3.7	20.9	20.6	– 1.4
Eastern Europe	13.3	13.2	– 0.8	25.1	25.7	2.4	38.4	38.9	1.3
Japan	70.1	69.7	– 0.6	22.8	22.6	– 0.9	92.9	92.3	– 0.6
Other Asia	13.2	13.3	0.8	27.2	31.8	16.9	40.4	45.1	11.6
Others	3.0	2.9	– 3.3	3.6	4.9	36.1	6.6	7.8	18.2
Total	165.0	160.1	– 3.0	170.8	176.0	3.0	335.8	336.1	0.1
Seaborne*	140.7	137.1	– 2.8	133.1	139.4	5.3	273.8	276.5	1.1

* Excluding overland, barge and lake deliveries
(R) Revised
(P) Preliminary

In total, the EEC-12 represente. the largest decrease in coal trade in 1986, principally through reduced imports from third-party countries (non-Community members). As shown in Table 2, France and the United Kingdom account for the vast majority of the decrease. The difference in the total EEC coal imports shown in Table 1 and the imports from third-party countries (Table 2) represents reductions in intra-community trade (most notably West Germany).

TABLE 2
EEC-12 HARD COAL IMPORTS FROM THIRD PARTY COUNTRIES
(Million Metric Tons)

				Percent Change	
	1984	1985	1986 (P)	1985/84	1986/85
Germany	8.25	9.05	9.10	9.7	0.6
France	16.70	15.19	13.80	– 9.0	– 9.2
Italy	18.44	20.29	19.07	10.0	– 6.0
Netherlands	9.89	10.99	11.50	11.1	4.6
Belgium	6.72	6.85	6.47	1.9	– 5.6
Luxembourg	0.16	0.14	0.14	–26.3	0.0
United Kingdom	7.15	11.37	9.60	59.0	–15.6
Ireland	1.02	1.34	1.10	31.4	–17.9
Denmark	9.09	11.36	11.60	25.0	2.1
Greece	1.86	1.98	2.20	6.5	11.1
Spain	6.82	8.31	8.16	21.9	– 1.8
Portugal	0.44	1.21	1.67	175.0	38.0
Total	86.54	98.07	94.41	13.3	– 3.7

(P) Preliminary

Source: Eurostat, *"Rapid Reports, Energy"*, February, 1987

On the exporting side, the United States was the big loser in 1986. This reflected (1) the reduction in import requirements in the regions it serves, (2) low ocean freight rates, and/or (3) the deterioration in exchange rates (e.g. Australia) which allowed competitors to reduce their U.S. dollar price for coal. In short, the U.S. coal industry's major markets were smaller while at the same time other suppliers became more competitive. The net effect was a 9.0 percent decrease in U.S. metallurgical coal exports and a 5.1 percent decrease in thermal coal trade.

In contrast, Australia strengthened its position as the world's largest coal exporter. This was due to its proximity to the growth markets (Asia), lower freight rates and exchange rates which allowed more agressive pricing on both the contract and spot market.

Other exporters deserving mention are Colombia, the People's Republic of China and South Africa. The former two are notable for their increase in trade and the latter for its ability to maintain trade despite its political situation and the imposition of import restrictions by consumers; namely France, Denmark and the United States. South Africa's ability to minimize the effects of such restrictions through aggressive pricing of its output is due to a very low cost structure and a very favorable (at least for the producer with local costs) exchange rate.

Also worth noting among the 1986 exporting countries was the expansion of Soviet metallurgical trade. This reflects deliveries to Japan from long delayed mines which were originally contracted for as far back as 1974. The introduction of these supplies served to displace Japanese imports from both the U.S. and Australia.

Before proceeding to a review of the forecast for 1987, it is important to make note that while there was little growth in total coal trade in 1986, seaborne trade expanded by over 3 million tonnes. In other words, intra-regional trade (e.g. U.S. to Canada) deteriorated in 1986, while demand continued to grow for the truly competitive portion of the market. However, like the market in total, increases were registered in the thermal coal segment while the metallurgical coal market deteriorated.

Table 4 shows a comparison of last year's forecast of seaborne trade versus the actual results for 1986. As indicated, metallurgical coal trade only slightly exceeded the low range of the forecast, while actual thermal coal trade was only 1 percent less than the medium projection. In total, actual trade was 2.2 percent lower than the forecasted medium range of trade for 1986.

TABLE 3
WORLD HARD COAL EXPORTS 1986 VERSUS 1985
(Million Metric Tons)

	METALLURGICAL COAL			THERMAL COAL			TOTAL		
	1985 (R)	1986 (P)	% Change	1985 (R)	1986 (P)	% Change	1985 (R)	1986 (P)	% Change
United States	54.7	49.8	– 9.0	29.3	27.8	– 5.1	84.0	77.6	– 7.6
Australia	49.8	48.7	– 2.2	38.1	43.3	13.6	87.9	92.0	4.7
South Africa	4.8	5.2	8.3	40.1	38.8	– 3.2	44.9	44.0	– 2.0
Canada	22.5	22.4	– 0.4	4.9	4.8	– 2.0	27.4	27.2	– 0.7
Colombia	0.4	0.6	50.0	3.3	5.0	51.5	3.7	5.6	51.4
West Germany	5.7	5.0	–12.3	3.1	2.3	–25.8	8.8	7.3	–17.0
United Kingdom	0.1	0.1	0.0	2.4	2.7	12.5	2.5	2.8	12.0
Poland	10.3	9.8	– 4.9	25.8	25.5	– 1.2	36.1	35.3	– 2.2
USSR	10.5	12.1	15.2	13.4	13.3	– 0.7	23.9	25.4	6.3
PRC	3.0	3.2	6.7	4.8	6.7	39.6	7.8	9.9	26.9
Others	3.2	3.2	0.0	5.6	5.8	3.6	8.8	9.0	2.3
Total	165.0	160.1	– 3.0	170.8	176.0	3.0	335.8	336.1	0.1
Seaborne*	141.0	137.1	– 2.8	132.4	139.4	5.3	273.4	276.5	1.1

(R) Revised
(P) Preliminary

TABLE 4
COMPARISON OF ACTUAL VERSUS FORECASTED
SEABORNE COAL TRADE IN 1986
(Million Metric Tons)

	Metallurgical	Thermal	Total
1986 Forecast*			
Low	136.4	123.5	259.9
Medium	141.9	140.8	282.7
High	146.3	148.6	294.9
1986 Actual (P)	137.1	139.4	276.5

(Preliminary)

*Source: Chase Manhattan Bank, N.A., *The Coal Situation*, Vol. 6 – No. 2, March, 1986.

Outlook for 1987

The forecast of coal trade in 1987 is for a continuation of the general trends experienced in 1986. For the metallurgical coal segment, projected reduction in consumption and production of steel in the industrialized countries will lead to reduced imports by Japan and, to a lesser extent, Western Europe. Partially offsetting lower trade in these regions will be the increased need for coking coal in Latin America and Other Asia, most notably Brazil and Korea. The major considerations supporting this conclusion are similar to those which affected market performance in 1986, namely (1) a weak U.S. dollar in Yen and European currency terms and (2) the competitive advantage of producing steel in the countries of growth. Also not to be ignored are trade restrictions in the industrialized world (e.g. U.S.). The only uncertainties surrounding the level of coking coal trade are the severity of these considerations. These uncertainties are recognized in the range of metallurgical trade volumes provided in Table 5.

For the thermal coal segment, price and volume discipline on the part of OPEC is expected to maintain oil prices at levels which do not adversely impact the viability of coal in 1987. This is not to say there will not be fluctuation in the market, but rather that the amplitude and duration of oil price fluctuations should not be sufficient to provide the economic incentive to alter fuel purchasing patterns. Therefore, the primary influences affecting the level of thermal coal import requirements in 1987 will be (1) the level of economic growth and its influence on industrial activity (e.g. cement and electricity production) and (2) the operational capability of other non-liquid or gaseous fuel generation (e.g. nuclear and hydro-electric generation).

Expansion of new coal generating capacity and the increased utilization of existing coal-fired electrical generation are expected to partially offset the increased utilization and production of electricity by nuclear and hydro-electric sources. This will result in slightly reduced thermal coal trade in 1987 (medium forecast).

As indicated in the medium forecast shown in Table 5, there will be shifts in the areas of growth as experienced in 1986. Also provided in Table 5 is the range in thermal coal import requirements which recognizes the uncertainties surrounding the key forecasting parameters such as hydro-electric generation, operating performance of nuclear plants, and the strength of economic activity and its influence on electricity demand and cement production.

TABLE 5
WORLD HARD COAL TRADE FORECAST
(Million Metric Tons)

	METALLURGICAL				THERMAL				TOTAL			
	1986	1987			1986	1987			1986	1987		
	(P)	Low	Med.	High	(P)	Low	Med.	High	(P)	Low	Med.	High
Importers												
North America	5.8	5.6	6.0	6.4	9.3	8.0	8.3	8.5	15.1	13.6	14.3	14.9
Latin America	11.0	11.6	12.0	12.5	1.1	1.1	1.1	1.4	12.1	12.7	13.1	13.9
EEC	34.9	33.5	33.8	35.0	69.3	67.0	69.0	71.0	104.2	100.5	102.8	106.0
Other W. Europe	9.3	9.3	10.0	10.0	11.3	10.5	11.7	12.1	20.6	19.8	21.7	22.1
Eastern Europe	13.2	13.4	13.4	14.0	25.7	26.0	26.0	26.0	38.9	39.4	39.4	40.0
Japan	69.7	64.0	65.7	66.9	22.6	21.0	23.0	24.0	92.3	85.0	89.2	90.9
Other Asia	13.3	14.1	14.1	15.5	31.8	29.5	30.5	32.5	45.1	43.6	44.4	48.0
Others	2.9	2.9	3.3	3.3	4.9	5.5	5.1	5.7	7.8	8.4	8.4	9.0
Total	160.1	154.4	158.2	163.6	176.0	168.6	174.7	181.2	336.1	323.0	333.9	344.8
Exporters												
United States	49.8	47.3	48.5	50.7	27.8	22.9	24.6	27.3	77.6	70.1	72.7	77.7
Australia	48.7	47.0	48.3	50.4	43.3	41.3	44.0	45.0	92.0	87.8	92.3	95.4
South Africa	5.2	5.2	5.2	5.2	38.8	35.8	37.3	38.5	44.0	41.0	42.5	43.7
Canada	22.4	20.5	21.7	22.5	4.8	4.4	4.6	5.0	27.2	24.5	25.7	27.4
Colombia	0.6	0.4	0.5	0.5	5.0	8.9	8.9	8.9	5.6	9.3	9.4	9.4
Poland	9.8	9.3	9.3	9.3	25.5	23.7	23.7	24.7	35.3	33.0	33.0	34.0
USSR	12.1	12.7	12.7	13.0	13.3	13.3	13.3	13.5	25.4	27.0	27.0	27.2
PRC	3.2	3.8	3.8	3.8	6.7	7.5	7.5	7.5	9.9	11.3	11.3	11.3
Others	8.3	8.2	8.2	8.2	10.8	10.8	10.8	10.8	19.1	19.0	19.0	19.0
Total	160.1	154.4	158.5	163.6	176.0	168.6	174.7	181.2	336.1	323.0	333.9	344.8
Seaborne	137.7	131.8	135.9	141.0	139.4	134.5	138.6	145.1	276.5	266.3	274.5	286.1

(P) Preliminary

The high forecast for both the metallurgical and the thermal coal markets also include a consideration of possible consumer stock buildup owing to the expiration of the United Mine Workers' contract with U.S. coal producers at the end of 1987.

With regard to exports, it is recognized that both Cerrejon (Colombia) and the People's Republic of China will expand thermal coal exports which will limit the growth for the other traditional suppliers. On the metallurgical coal side, the continued expansion of Soviet coal production is expected to compound the effect of reduced exports by the traditional suppliers to Japan. Once again, the U.S. is expected to be the hardest hit for both metallurgical and thermal coal exports.

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The Coal Situation

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AUTHOR'S NOTE

**The following paper was presented at
The Diamond Jubilee Convention of
The Rocky Mountain Coal Mining Institute
June 28-30, 1987.**

CHALLENGES OF THE FUTURE

The primary task of an author is to keep the reader awake and interested long enough to deliver his message. Since one of my responsibilities at Chase is to continually monitor the market and provide prognostications as to the future for coal, I can quite easily provide chart after chart of statistics showing my outlook for coal demands, production and trade. By the time I was finished, those readers who were still awake would probably remember seeing a bunch of numbers but would be hard pressed to recall a single one. The others would have been the most benefited by the opportunity for sleep. Thus the reason for the title of my paper, "Challenges of the Future", for I wish to concentrate on the key issues and market conditions that will confront the U.S. coal industry. But, don't get me wrong. When I use the word challenge I am using it in a positive, constructive way. Just as a person in everyday life, the coal industry can either step up to a challenge with a view towards opportunity or it can shrink away in fear of change and adversity.

Jolly Olde England

Before proceeding to the challenges of the future, let me digress a bit to dwell briefly on the challenges of the past.

Let me go back to the days when knights were bold and the United States was not even a gleam in the eyes of our forebearers. In 1307, Edward I of England issued a proclamation forbidding the use of sea coal for lime burning in Southward because, "from which is emitted so powerful and unbearable a stench that , as it spreads throughout the neighborhood, the air is polluted over a wide area." In 1578, two hundred and seventy-one years later, a brewer and a dyer were committed to prison for burning coal in Westminster. Close your eyes and you can almost see the U.S. government, almost four hundred years later, issuing a proclamation requiring the U.S. Northeast utilities to switch to oil from coal for air quality considerations.

Getting back to medieval England, coal was long considered an inferior fuel, that is, until a growing and changing economy had eliminated its woodlands leading to the dramatic increase in the price of charcoal, the fuel of choice. In 1932, a writer had written of that period, "so rapid an increase in the cost of any commodity in common use must have been almost without precedent in the history of Western civilization." Of course, we of this era could challenge that statement with our oil price shocks.

Returning to early England, even though coal use, with the aid of high charcoal prices, was expanding rapidly, substitution of coal for wood faced technical problems, such as a fear of contamination. These problems were overcome through the research and development efforts of an ingenious inventor in Derbyshire who created a coke out of the coal. This and other technologies led to rapid growth in coal usage between the seventeenth and twentieth centuries. Then came oil and natural gas, and the substitution cycle repeated, with oil and gas replacing coal in locomotive power and industrial and residential heating processes. But, with changing economies and changes in technology, steam power was replaced by electricity and coal's new market was born. Nevertheless, hard times were ahead as growth in coal-fired power plants was unable to offset the dieselization of railroads, the elimination of steam use by industry, and the loss of the home heating market.

Turning to the U.S., in the 1960's, expanding power generation usage began to offset the declines in other markets leading to increased coal usage through the middle 1970's. This, despite low oil and natural gas prices, the development of nuclear energy, and the introduction of stricter environmental standards.

Then came the oil shocks, and hopes were high for a return to "the glory days". Headlines announced that "King Coal" would lead the way to the promised land of energy independence. The coal industry met the challenge and expanded. But then came recession, falling oil prices, and the environmental concern of "acid rain".

The key point of this very brief review of history is that the coal industry changed and adapted; it grew, it shrank and then expanded and contracted again only to reexpand. Mining technologies changed, combustion processes improved, and environmental standards were met and coal use grew. The general perception of the coal industry, however, is quite different.

Even though the coal industry in total has faired well in the past few years, in fact it did damn well considering the

circumstances, the perception in and out of the industry is the opposite. If today you would ask the average person on the street, "How is coal doing?", I am willing to lay odds that the response would be "terrible." Regrettably, I could also say this for many people in the coal industry. Simply put, many believe that coal qualifies for the headlines which appeared on the cover of the December 17, 1984 issue of *Business Week* which proclaimed "The Death of Mining". Well, I wish to proclaim that the news of the demise of coal is greatly exaggerated.

There is no denying that the industry has high unemployment, low prices and overcapacity, but equally as important is the fact that coal provides 24 percent of the U.S.'s energy needs and is used to produce 55 percent of our electricity. And it has been good to companies that produce it. For even though coal has not provided the returns some companies had originally expected, it has also not produced the losses they may have experienced in other business activities. But what about the future, which, of course, is what this paper is supposed to be all about.

The Future of Coal

As for the future, I see a market environment controlled by relatively sluggish economic growth rates, industrialized economies driven increasingly by service related and high technology industries, and a society focusing on deregulation and technological development, in an effort to control production costs and to meet the competitive challenge.

On a global scale, I see the continuing shift of heavy industry to the developing countries. Countries which are taking the most advanced manufacturing processes available today and marrying them with their most abundant resource; a labor force which works hard and cheap, at least by our standards. Primarily occurring in Asia, the coming years have been described by some as "The Pacific Era."

Coming back to the United States, (1) forecasts of economic growth, (2) completion of long delayed nuclear power plants, (3) strong competition from natural gas, (4) addition of PURPA supported cogeneration facilities, (5) a contracting steel industry, (6) improving technologies and, (7) continuing emphasis on the environment lead to the forecasts of U.S. coal market demands shown in Table 1.

Coal usage in the electric power sector is projected to grow sluggishly in the short term before accelerating in the post-1990 era. The primary contributor to this pattern of growth is the "nuclear hump" which occurs between now and 1991-92. With no new nuclear orders in the past ten years and little likelihood of seeing any in the foreseeable future, the need for coal to meet future electricity needs increases.

In the industrial sector, strong competition from natural gas and the lack of growth in cement production, limits the market for coal. I should point out, however, that I include coal use for cogeneration under electric power requirements, a subject I'll return to.

In the metallurgical sector of the domestic market, I see little hope for a rejuvenation of the coke-based blast furnace. Rather, the opposite occurs with continued slow deterioration of the market.

On the export side, U.S. exports of thermal coal are restricted by the availability of cheaper supplies elsewhere. It is not until the middle 1990's before U.S. coals will be required to meet an expanding market. We at Chase are following a number of potential new offshore supply sources, all of which are more competitive than U.S. suppliers.

As for U.S. metallurgical coal, the long-term trend is for a general stability in volumes exported. This reflects the high quality of U.S. supplies which supports the blending of low cost supplies elsewhere and, of course, there are balance of payments considerations. Internationally, the trend in the trade of metallurgical coal differs from the experience I see for our own U.S. domestic usage. This is because of the growth of integrated steel mills in lower cost, coal resource poor areas of the world, such as Korea, Brazil, Taiwan, etc. The driving forces here are labor costs and a stronger domestic market.

The bottom line of my long term forecast is that the U.S. coal industry as it currently exists would, on paper, need no new capacity to meet the market until the late 1990's. This, of course, assumes that all coal supplies were interchangeable and that transportation costs were of little importance to the final user. We know this is not the case. New mines will be opened to meet specific regional markets and to replace existing higher cost operations. Nevertheless, one could draw the

TABLE 1

U. S. PRODUCED COAL REQUIREMENTS

(Million Short Tons)

	1986 Actual	1990	1995	2000	2005
Domestic Market					
Electric Power	684	720	811	905	989
Industrial and Other Thermal Uses	81	81	83	87	94
Metallurgical	36	32	29	26	22
Total	801	833	923	1,018	1,105
Export					
Thermal	29	20	25	33	42
Metallurgical	55	53	56	53	50
Total	84	73	81	86	92
Grand Total	885	906	1,004	1,104	1,197

conclusion that the industry is going to be in an excess capacity situation for a long time. This statement is a perfect lead in to the "Challenges" portion of this paper.

Challenge #1: Low Prices

The first challenge facing the coal industry is dealing with low prices. Because of competition from other fuels and among coal producers, prices have declined. I expect them to stay low for the next couple of years. What to do? The same thing that the industry has been doing: *concentrate on improving productivities, lowering costs and controlling overheads.* Of course, increasing productivities lead to Challenge #2.

Challenge #2: Excess Capacity

I define excess capacity to be sustainable productive capability available or available within a short period of time that is economically viable. Under this criteria I estimate that there is between 100 and 150 million tons of additional capacity available in the U.S., half west of the Mississippi and half east of the Mississippi. Improving productivities compounds the situation. There are two answers to the problem, (1) increases in demand or (2) consolidation of operations in supply regions. Consolidation is occurring; two examples are the merging of Peabody and Eastern Fuel Associates and Consolidation Coal's acquisition of Quarto Mining. Of course, consolidation can be painful leading to further unemployment from senior officer level on down. But let's take a lesson from Europe. There, the vast majority of current coal production is subsidized in order to support employment. One of the unfortunate legacies of this policy is the fact that today's European coal miner is no more secure than his grandfather or great-grandfather was when the programs first started. Simply put, move on or continue the cycle forever just like Larry Talbott in the B grade movies of the past was doomed to turn into a werewolf at the return of the full moon.

Challenge #3: Market Demands

As I stated, one answer to excess supply is increased demand. Clearly, the coal industry has no direct control over economic growth and changing industry structure. It cannot stop this nation's march to a service society. It cannot stop the consumer's desire to pay premium prices for blue jeans possessing a few yards of embroidery thread on the rear pocket. But, it can look for and take advantage of trends. One is the growing tendency by utilities to forego the construction of large new power plants. In their place are being built cogeneration, small power facilities and possibly private non-utility-owned power plants. Many of these are funded by non-utility entities, but there is growing involvement of the utilities themselves through investment subsidiaries. To date, the majority of cogeneration facilities, largely supported by PURPA legislation, have been fueled by natural gas. Relatively few have been coal-fired. Here is an opportunity to build a market. The U.S. coal industry must become more proactive, particularly when it comes to power facilities not relying upon high avoided power costs for their existence but rather their own economics. Think "supply steam" rather than "produce coal".

Challenge #4: Changing Technologies

There are two technological issues facing the coal industry. The first is "acid rain", the second is "super conductivity". Clearly, acid rain legislation, when passed, will have a profound effect on the structure of the U.S. coal industry. There will be winners and there will be losers and some will stay even. In general, lower sulfur coal producers will benefit at least from a tonnage standpoint. I say from a tonnage standpoint only because, for sure, there will be a high sulfur price discount. And while the consumer will have to pay more for lower sulfur coal due to costs of mining and/or transportation, I'm not sure then there will be a premium as measured on a per unit of profit basis. Today's coal industry, at least the higher sulfur segment, is reacting to the potential for acid rain legislation through acquisition of lower sulfur coal producers or reserves as insurance policies. Others are actively pursuing support of "clean coal" technologies. Both of these actions must continue.

Super conductivity is a long-term technology that, if and when it becomes commercially viable, will affect the quantity and location of coal production particularly in the twenty-first century. From a quantity basis, super conductivity will reduce the amount of electricity that would have to be produced to meet final demand; quite obviously a negative for the industry. However, power plant sitings will change with long distance transmission supportable. This is certainly a positive opportunity for the Western coal industry or other more remote locations which enjoy favorable geology but unfavorable geography. This is Buck Rogers stuff, but the potential is real. Think new and use it to your advantage.

Challenge #5: Remember You Are Not Alone

The U.S. coal industry is one of the most competitive industries in the world. Resources are vast and widely distributed. There are a large number of players all of which are eager to grow. The key point here is that individual firms cannot make decisions without recognition of the reactions of their competitors. If an individual company sees an opportunity or a trend for which it is developing a response, it must proceed on the assumption that others see the same opportunity. Therefore, the first question to answer must be, "Is my plan of action better than my competitors'?" If the answer is no, don't be afraid to let go. Ignore the herd instinct. Rather, become increasingly more skeptical the more often you hear "but everybody else is doing it." That is precisely the time when you must become more selective in your business plans.

Conclusions

I have purposely avoided providing a profusion of numbers and detailed explanations as to the key parameters I utilize in forecasting the markets for coal. Rather, I have concentrated on the challenges I see facing the industry in the years ahead. It should have come as no great surprise that the issues and challenges I have identified are the same as those faced by the industry in the past. Briefly stated they are (1) competition (2) environmental concerns, (3) changing economies and (4) technology. As in the past, these challenges must be met by imagination, rational determination, and a strong business sense. As I stated in the beginning of my presentation the choice is yours, step up or shrink away.

As for me, I know the coal industry has the mettle to succeed. It has proved it time and again. If this sounds like an evangelist preacher speaking to his flock, I make no apologies, for I believe.

Reference: Hawthorne, Sir William "The Use of Coal" in *Energy World*, May 1981

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